**Individual Project due 24:00 7 October, 2012 (to be loaded onto your wiki).**

**Name:**Tharaga

Project - Thin client network for a small school using an “ultra” thin client

E.g. <http://www.ywterminal.com/en/product.asp?id=48>



The project could concentrate on installing a thin client network for a small school with solar panels, gel batteries,inverter and a small network of 20 desktop PC’s which may include a one server, printer and other necessary equipment. The proposed networkprovides service to a classroom that has fluorescent lighting. Classes operate between the hours 8.30am to 3.30pm (7.00 hours)

Assumptions:

• The existing computer network is ON 5 days per week 24 hours per day

• The existing classroom lighting is ON 5 days per week 10 hours per day

**Individual Project**

1. Negotiate with the stakeholders to establish the extent to which sustainability is to be integrated

Answer:

**Hardware**

□renewable energy source

□low powered hardware

□energy efficient architecture

Summary: My Individual Project uses ….

**Software**

□energy management software

**Printing**

□local

□online

□toPdf/wiki

2. Advise short term technology solutions to achieve reduction of power consumption

Answer:

Power electronics is the technology associated with the efficient conversion, control and conditioning of electric power by static means from its available input form into the desired electrical output form.

Power electronic converters can be found wherever there is a need to modify the electrical energy form (i.e. modify its voltage, current or frequency). Therefore, the power handling capability of converters ranges from several milliwatts (as in a mobile phone) to hundreds of megawatts (as in a HVDC transmission system). A power ectronic converter is built around one (or more) device(s) operating in switching mode (either “on” or “off”). With such a structure, the energy is transferred from the input of the converter to its output by bursts.

Electrical energy savings potential through power electronics

Power supply - 1% saving potential

Lighting - 25% saving potential

Inductive cooking - 25% saving potential

Traction drives - 20% -30% saving potential

Motor control - 30%-40% saving potential

Air conditioner - 30%-40% saving potential

Standby power (TV, PC, Audio) - 90% saving potential

3. Identify energy usage within the scope of the ICT project and provide a detailed report

Answer: Power consumption of ultra thin client (Y210)

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| --- | --- | --- |
| **Condition** | **Power consumption**  **(watts)** | **Notes** |
| OFF | 6 | (0.3x20) |
| MAX BOOT | 70 | (3.5x20) |
| IDLE | 64 | (3.2x20) |
| Wordprocessing | 66 | (3.3x20) |
| Spreadsheets | 66 | (3.3x20) |
| Web browsing  <http://news.bbc.co.uk/2/hi/programmes/click_online/default.stm> | N/A |  |
| Low level music  <http://grooveshark.com/#/s/Fall+At+Your+Feet/3KIZB0?src=5> | 114 | (5.7x20) |
| Low level video  <http://www.joost.com/39w1yk49/#/?video_info=33p1yw1t> | 118 | (5.9x20) |
| Monitor | 420 | (21x20) approximately |
| Printing | 10 | 10 |

**PowerPoint Presentation**

Create a PowerPoint presentation of your individual Project with the following slides:

1. The Basics of preparing to integrate sustainability into ICT planning and design projects;
2. ICT sustainability from a business standpoint;
3. Energy efficiency as a stepping stone to sustainability;
4. Individual Project Strategy
5. Network operation and security;
6. Sketch of the recommended project system;
7. Test results
8. Short term technology solutions to achieve reduction of power consumption;
9. Energy usage within the ICT project - graph
10. Recommendations and Conclusion.

**Individual Report**

**For your individual project answer the following:**

1. Explain how sustainability can be integrated into your individual Project
2. Research and identify suitable technology solutions applicable to the project
3. Explain the power consumption data compared to benchmarks
4. Advise how sustainable management principles may be applied to your individual project resulting in reduced environmental impact
5. Provide key performance indicators (KPI) - sustainability performance for your individual Project

**Key Performance Indicators**

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| --- | --- | --- | --- |
| **Hardware** | **SD-KPI 1: Energy / greenhouse gas efficiency of production / products in use**  **(tons CO2)** | **SD-KPI 2: Proportion of products with “Design for Environment” / Eco-Label**  **(√)**  **or (x)** | **SD-KPI 3: Emissions of (hazardous) waste and toxic materials**  **Yes or No** |
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1. Advise what actions could improve the KPI’s for your Individual Project which foster sustainability and environmental best practice
2. Evaluate the estimated CO2 emissions with comparable benchmarks; and
3. Estimate the carbon dioxide (CO2) emissions for the Individual Project; and Individual Project + Recommended Actions

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| --- | --- | --- | --- |
| **Hardware** | **Benchmark**  **(tons CO2)** | **Individual Project**  **(tons CO2)** | **Individual Project**  **+**  **Recommended Actions**  **(tons CO2)** |
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1. Make recommendations in order of priority and give estimates of implementation costs on integration of sustainability for other ICT projects; and
2. Estimate potential energy savings and payback periods for recommended actions

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| --- | --- | --- | --- | --- |
| **Recommendation** | **Priority** | **Implementation Cost** | **Energy Saving** | **Payback Period** |
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